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**UNITED STATES PATENT APPLICATION TRANSMITTAL FORM**

**BOX PATENT APPLICATION**  
**ASSISTANT COMMISSIONER FOR PATENTS**  
**Washington, D.C. 20231**

Docket No.: 550.0167USU

Sir:

Transmitted herewith for filing is the patent application of

Inventor(s): Alan Farer and Shari R. Martin

For: COSMETIC COMPOSITION HAVING FLUOROSILANE COATED  
 PARTICULATES

Enclosed are:

**XXX** Specification (18 pps) consisting of: Description (12 pps); Claims (5 pps);  
 Abstract (1pp);

\_\_\_\_\_ 0 sheets of drawings;

**XXX** Declaration and Power of Attorney;

**XXX** An assignment of the invention to: Avon Products, Inc. including  
 \$40.00 recordation fee and Assignment Recordation Form Cover Sheet;

\_\_\_\_\_ Information Disclosure Statement (with copies of patent);

\_\_\_\_\_ Form - PTO-1449;

\_\_\_\_\_ Verified Statement Claiming Small Entity Status; and

\_\_\_\_\_ Priority of U.S. Patent Application Serial No. \_\_\_\_\_, filed on  
 is claimed under 35 U.S.C. §120.

The Filing Fee is calculated below.

CLAIMS AS FILED				
(1) For	(2) Number Filed	(3) Number Extra	(4) Rate	(5) Basic Fee \$760.00
Total Claims	20 - 20 =	0	x \$18.00	\$0
Independent Claims	3 - 3 =	0	x \$78.00	\$0
Multiple Dependent Claim Fee			x \$260.00 = \$0.00	
<b>TOTAL FILING FEE</b>			<b>\$760.00</b>	

1/2 FILING FEE FOR SMALL ENTITY

\$N/A

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**XXX** A check in the amount of \$ 800.00 for the filing fee (\$760) and assignment recordal fee (\$40) is enclosed.

**XXX** The Commissioner is hereby authorized to charge any additional fees under 37 C.F.R. §§1.16 and 1.17 which may be required with this communication or during the entire pendency of the application, or credit any overpayment, to **Deposit Account No. 01-0467**. A duplicate copy of this Form is enclosed.

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**CERTIFICATE OF EXPRESS MAILING**

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" Certificate No. **EL505476872US**, service under 37 CFR §1.10 and is addressed to: Box Patent Application, Assistant Commissioner for Patents, Washington, D.C. 20231 on December 20, 1999.

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(Signature of person mailing paper)

# COSMETIC COMPOSITION HAVING FLUOROSILANE COATED PARTICULATES

## BACKGROUND OF THE INVENTION

### 5 1. Field of the Invention

The present invention relates to cosmetic compositions. More particularly, the present invention relates to cosmetic compositions having fluorosilane-coated particulates. The  
10 cosmetic composition may be a blush, a concealer, an eye shadow, a lipstick, a lip liner, an eye liner, a liquid or cream compact make-up, a mascara, a moisturizer, a face powder or pressed powder. It is believed that the particulates coated with fluorosilane according to the present invention can be  
15 incorporated into any composition intended for any cosmetic use.

The present invention further relates to methods of reducing (a) color drift in a pigmented cosmetic, especially a pigmented face powder or blush cosmetic during wear; (b)  
20 staining potential of a lipstick on a person; and (c) oil breakthrough in facial products. The present invention also relates to methods of improving or increasing (a) comfort of cosmetic products; and (b) water resistance in cosmetic products, especially in a mascara.

cosmetic products; and (b) water resistance in cosmetic products, especially in a mascara.

## 2. Description of the Prior Art

5

U.S. Patent No. 5,482,547 to Bugnon et al. is directed to a paint or varnish containing an organic pigment coated with a silicate.

10 Japan Patent No. 7053326 is directed to a makeup cosmetic material that contains modified powder prepared by coating powder with methylhydrogensiloxane and heat-treating and blending modified powder coated with a fluorine containing compound.

15 Fluorosilanes have been used in construction and for coating glass. However, heretofore, tridecafluorooctyltriethoxy silane-coated cosmetic pigments are not known.

20 Some cosmetic products, particularly cosmetic products having colored compositions, suffer from stability problems that lead to an aesthetically unattractive appearance. These problems include settling, migration and floatation of colorants in nail enamel, color drift in a face powder or blush cosmetic

during wear, oil breakthrough in facial products, and staining of a lipstick on a person.

Despite the continuous efforts of the cosmetic industry to  
5 develop cosmetic compositions that are more stable and  
aesthetically pleasing under normal use conditions, the  
appearance of a cosmetic after application deteriorates rapidly  
leading to an aesthetically unattractive appearance of the  
wearer of the cosmetic.

10 To overcome the instability problem of certain cosmetics  
and to minimize or eliminate the aesthetic deterioration of  
certain cosmetics during normal use, the present invention  
provides cosmetic compositions that employ particulates, such as  
15 pigments, that are coated with fluorosilane.

The compositions of the present invention are stable for an  
extended period of time, and have enhanced wear resistance due  
to the oil and water resistant nature of the fluorosilane coated  
20 cosmetic particulates. Thus, since the compositions of the  
present invention will not be affected by moisture or oil from  
the skin, they will not intensify the color of the product  
(known as "blooming" of the product). Accordingly, truer color  
of the product is maintained.

## SUMMARY OF THE INVENTION

It is an object of the present invention to provide  
5 cosmetic compositions having particulates, at least some of  
which, and preferably most of which, are coated with  
fluorosilane.

10 It is another object of the present invention to provide  
such cosmetic compositions that can be a blush, a concealer, an  
eye shadow, a lipstick, a liquid or cream compact make-up, a  
mascara, a moisturizer, or a powder, such as a face powder or a  
pressed powder.

15 It is still another object of the present invention to  
provide a method of reducing color drift in cosmetic  
compositions, such as a liquid or cream compact make-up or a  
face or blush powder, during wear.

20 It is a further object of the present invention to provide  
a method of reducing staining potential of a lipstick on a  
person.

It is still a further object of the present invention to provide a method of improving or increasing water resistance in cosmetic compositions, especially a mascara.

## 5 DETAILED DESCRIPTION OF THE INVENTION

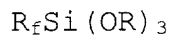
The present invention provides cosmetic compositions having particulates or particulate material coated with fluorosilane.

10 The term "fluorosilane" in the present invention refers to a silicon-containing compound having a hydrocarbyl group substituted by at least one fluorine atom and a reactive hydrocarbyloxy group capable of displacement by a nucleophile.

15 The term "hydrocarbyl" in the present invention refers to a linear, branched and cyclic group containing carbon and hydrogen such as an alkane, an alkene, an alkyne and an aryl group. The hydrocarbyl group may be additionally interrupted and/or substituted by one or more of the following: a halogen, a cyano, 20 a keto, an ester, hydroxyl, carboxyl, oxygen, sulfur, or nitrogen.

The term "perfluro hydrocarbyl" in the present invention refers to a fully fluorinated hydrocarbyl group.

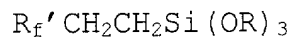
The fluorosilane is represented by the formula:



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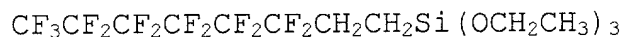
wherein  $R_f$  is a  $C_4 - C_{16}$  hydrocarbyl group having at least one fluorine atom, and wherein  $R$  is a  $C_1 - C_6$  hydrocarbyl group.

The preferred fluorosilane is represented by the formula:



wherein  $R_f'$  is a  $C_4 - C_{14}$  perfluoro hydrocarbyl group, and wherein  $R$  is methyl or ethyl.

An example of the preferred fluorosilane is tridecafluorooctyltriethoxy silane represented by the formula:



20

Tridecafluorooctyltriethoxy silane is available from Sivento, Piscataway, N.J., under the trade name DYNASILANE® F 8261.



The particulates coated with fluorosilane according to the present invention can be organic pigments, inorganic pigments, organic fillers, inorganic fillers, or any combination thereof.

5        Examples of the organic particulate pigments include azo, xanthene, quinone, lakes, especially aluminum lakes, strontium lakes, barium lakes, FD&C and D&C Red 6, Red 7, Red 30, Red 34, Yellow 5, Blue 1, or derivatives thereof, or mixtures thereof. Examples of the inorganic particulate pigments are iron oxide, especially red, yellow and black iron oxides, titanium dioxide, 10 zinc oxide, potassium ferricyanide ( $K_3Fe(CN)_6$ ), potassium ferrocyanide ( $K_4Fe(CN)_6$ ), potassium ferrocyanide trihydrate ( $K_4Fe(CN)_6 \cdot 3H_2O$ ), and mixtures thereof. Examples of the organic fillers include starch. Examples of the inorganic fillers 15 include talc, mica, silica, and mixtures thereof.

A preferred tridecafluorooctyltriethoxy silane-coated pigment includes tridecafluorooctyltriethoxy silane-coated black ore iron oxide, and tridecafluorooctyltriethoxy silane-coated 20 red iron oxide. Tridecafluorooctyltriethoxy silane-coated red iron oxide ( $Fe_2O_3$ ) is available from Cardre Pigment Technologies, Inc., South Plainfield, N.J.

The amount of fluorosilane is about 0.01 percentage by weight (wt%) to about 5 wt%, and the amount of particulates is about 95 wt% to about 99.99 wt%, of the total weight of the fluorosilane coated particulate. Preferably, the amount of fluorosilane is about 2 wt%, and the amount of particulates is about 98 wt% of the total weight of the fluorosilane coated particulate.

The particulates coated with fluorosilane are about 0.1 wt% to about 40 wt% of the total weight of the composition. Preferably, the particulate coated with fluorosilane is about 1 wt% to about 25 wt% of the total weight of the composition.

While, in general, the fluorosilane is about 0.0005 wt% to about 1.5 wt% of the total weight of the cosmetic composition, the amount of fluorosilane varies within the range depending upon its intended product. For example, the fluorosilane is about 0.01 wt% to about 1.5 wt% of the total weight in a pressed face powder or blush. The fluorosilane is about 0.01 wt% to about 0.5 wt% of the total weight in a mascara. The fluorosilane is about 0.0015 wt% to about 0.30 wt% of the total weight of the composition in a lip product. It is about 0.01 wt% to about 0.5 wt% of the total weight in a liquid make-up.

The fluorosilane is about 0.01 wt% to about 1.5 wt% of the total weight of the composition in an eye shadow.

A cosmetic composition of the present invention can be an unpigmented cosmetic composition having fluorosilane coated particulates. Such unpigmented compositions include, for example, a skin treatment product, and a sunscreen. In such cases, the fluorosilane is about 0.01 wt% to about 0.50 wt% of the total weight of the unpigmented composition.

In general, fluorine-treated particulates do not dissolve or disperse in water, hydrocarbon solvents or common organic solvents. Fluorosilanes are also insoluble in water and have limited solubility in hydrocarbon and other common organic solvents, but can be dispersed in ethanol. It has been surprisingly found that fluorosilane-containing water-based compositions can be easily prepared according to the present invention. For example, the lipsticks of the present invention can be prepared by dispersing particulate material coated with fluorosilane, such as pigments and/or fillers coated with fluorosilane, into a slurry. Thereafter, the slurry is added to a lipstick formulation.

Ordinarily, when organic pigments, such as common organic colorants, are used in a lipstick formulation, the organic pigment interacts with the moisture on the lips. Such interaction causes staining and dries the lips. According to the present invention, coating organic pigments with fluorosilane in a lipstick formulation produces a lipstick with reduced staining potential and improved moisturization. Specifically, the water repellent nature of the fluorosilane coating prevents and protects the pigments from interacting with moisture. Thus, the lipstick of the present invention minimizes the staining of the lips and results in a greater amount of moisture being bound to the lips. In addition to water proofing properties, the lipstick of the present invention also has improved wear, moisturization, and reduced color drift.

A blush or face powder of the present invention can be prepared by coating pigment and/or filler particulates with fluorosilane in such powders and thereafter mixing together these ingredients to obtain a uniform composition. The resulting blush or face powder has enhanced wear resistance. Such powders during wear display enhanced water proofing and reduced color drift, which is otherwise caused by the blooming of shade during the day due to its interaction with skin lipids and with skin moisture vapor. In addition to the coated

pigments, the blush or face powder formulations will preferably have filler particulates as well coated with fluorosilane.

In a blush or a face powder composition, the amount of  
5 pigments coated with fluorosilane are about 1 wt% to about 15 wt% of the total weight of the composition. As stated before, the amount of fluorosilane is about 0.01 wt% to about 1.5 wt%.

A moisturizer of the present invention can be prepared by  
10 dispersing particulates, such as pigments and/or fillers, coated with fluorosilane into a slurry and thereafter adding the slurry to a moisturizer formulation. The coated particulates of the present invention when added to the moisturizer vehicle causes the formation of an oil and water repellent film, which produces  
15 a moisturizer that displays reduced oil breakthrough. The most commonly used particulates in this case are talc, mica, silica, iron oxides and titanium dioxide. To achieve these benefits, about 3 wt% to about 20 wt%, based on the total weight of the composition, of the fluorosilane-coated particulates are in the  
20 moisturizer composition, with the fluorosilane being about 0.05 wt% to about 0.5 wt%.

Thus, fluorosilane coated particulates, such as pigments, fillers or a combination of pigments and fillers, of the present

invention in a cosmetic composition improve wear resistance and water proofing properties of blush, powder and lip cosmetics. In a face powder, it improves the color drift over time.

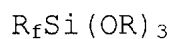
5 In addition to the coated particulates, the cosmetic compositions can also include one or more of the following: a chelating agent, an emollient, an emulsifier, a film former, a fragrance, a humectant, a plasticizer, a preservative, a resin, a retinoid, a skin penetration enhancer, a solvent, a  
10 stabilizer, a sunscreen, a surfactant, a thickener, a vitamin and a wax.

The present invention has been described with particular reference to the preferred embodiments thereof. It will be  
15 obvious that variations and modifications may be made therein without departing from the spirit and scope of the present invention as defined by the following claims. Also, singular used in the application can also mean plural of the same ingredient unless otherwise indicated. Also, improving means  
20 increasing unless otherwise indicated.

WHEREFORE WE CLAIM:

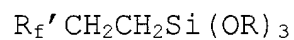
1. A cosmetic composition comprising a plurality of particulates, at least some of which are coated with fluorosilane.

2. The cosmetic composition according to claim 1, wherein said fluorosilane is represented by the formula:



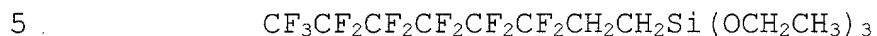
wherein  $R_f$  is a  $C_4 - C_{16}$  hydrocarbyl having at least one fluorine atom and R is a  $C_1 - C_6$  hydrocarbyl.

3. The cosmetic composition according to claim 2, wherein said fluorosilane is represented by the formula:



wherein  $R_f'$  is a  $C_4 - C_{14}$  perfluoro hydrocarbyl and R is methyl or ethyl.

4. The cosmetic composition according to claim 3, wherein said fluorosilane is represented by the formula:



5. The cosmetic composition according to claim 1, wherein said particulates are selected from the group consisting of pigments, fillers, and mixtures thereof.

10 6. The cosmetic composition according to claim 5, wherein said pigment is selected from the group consisting of organic pigments, inorganic pigments, and a combination thereof.

15 7. The cosmetic composition according to claim 5, wherein said pigment is an inorganic pigment selected from the group consisting of an iron oxide, titanium dioxide, zinc oxide, potassium ferricyanide ( $\text{K}_3\text{Fe}(\text{CN})_6$ ), potassium ferrocyanide ( $\text{K}_4\text{Fe}(\text{CN})_6$ ), potassium ferrocyanide trihydrate ( $\text{K}_4\text{Fe}(\text{CN})_6 \cdot 3\text{H}_2\text{O}$ ),  
20 and mixtures thereof, and wherein said filler is selected from the group consisting of mica, talc, silica, starch, and mixtures thereof.

8. The cosmetic composition according to claim 1,



wherein the composition is a product selected from the group consisting of a blush, a concealer, an eye shadow, a lip product, a liquid make-up, a cream make-up, a mascara, a moisturizer, and a powder.

5

9. The cosmetic composition according to claim 1, wherein the composition is either a powder or blush, and wherein said fluorosilane is about 0.01 wt% to about 1.5 wt% of the total weight of the cosmetic composition.

10

10. The cosmetic composition according to claim 1, wherein the cosmetic composition is a mascara, and wherein said fluorosilane is about 0.01 wt% to about 0.5 wt% of the total weight of the cosmetic composition.

15

11. The cosmetic composition according to claim 1, wherein the cosmetic composition is a lip product, and wherein said fluorosilane is about 0.0015 wt% to about 0.30 wt% of the total weight of the cosmetic composition.

20

12. The cosmetic composition according to claim 1, wherein the cosmetic composition is a liquid make-up, and wherein said fluorosilane is about 0.01 wt% to about 0.5 wt% of the total weight of the cosmetic composition.

13. The cosmetic composition according to claim 1, wherein the cosmetic composition is an eye shadow, and wherein said fluorosilane is about 0.01 wt% to about 1.5 wt% of the total weight of the cosmetic composition.

14. A method of reducing staining potential of a lipstick on a person, comprising applying to the person a lipstick having the composition of claim 1.

15. A method of improving water and/or oil resistance in a mascara on a person, comprising applying to a person a mascara of the composition of claim 1.

16. A method of improving wear resistance of a cosmetic having a plurality of particulates comprising coating at least some of said particulates with fluorosilane.

17. A method of reducing oil breakthrough in a facial product on a person, comprising applying to the person a facial product of the composition of claim 1.

18. A method of reducing color drift in a powder cosmetic during wear on a person, comprising applying to the person a powder cosmetic of the composition of claim 1.

5 19. An unpigmented cosmetic composition comprising a fluorosilane.

20. A method of moisturizing skin comprising applying to the skin the composition of claim 1.

## ABSTRACT OF THE DISCLOSURE

A cosmetic composition having particulates coated with fluorosilane, such as a pigment and/or filler coated with fluorosilane is provided. The cosmetic composition can be a blush, a concealer, an eye shadow, a lipstick, a liquid make-up, a mascara, a moisturizer, or a powder. The present invention also provides methods of (a) reducing staining potential of a lipstick on a person, (b) improving water and/or oil resistance in cosmetic compositions, especially in a mascara, (c) reducing oil breakthrough in a facial product, and (d) reducing color drift in a powder cosmetic during wear.

**DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION**Docket No. 550.0167USU

As below named inventors, we hereby declare that:

Our residences, post office addresses and citizenships are as stated below next to our respective names.

We believe we are the original, and first joint inventors of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**COSMETIC COMPOSITION HAVING FLUROSILANE  
COATED PARTICULATES**

the specification of which

(check one) XX is attached hereto.

\_\_\_\_\_ was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_  
and was amended on \_\_\_\_\_ (if applicable).

We hereby state that we have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

We acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to us to be material to the patentability of this application as defined in Title 37, Code of Federal Regulations, §1.56.

We hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate(s) listed below and have also identified below any foreign application(s) for patent or inventor's certificate(s) having a filing date before that of the application on which priority is claimed:

<u>Prior Foreign Application(s)</u>			<u>Priority Claimed</u>
_____	_____	_____	___ Yes ___ No
(Number)	(Country)	(Day/Mon/Year Filed)	
_____	_____	_____	___ Yes ___ No
(Number)	(Country)	(Day/Mon/Year Filed)	
_____	_____	_____	___ Yes ___ No
(Number)	(Country)	(Day/Mon/Year Filed)	

We hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, we acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)

(Filing Date)

(Status - patent, pend., abandon.)

(Application Serial No.)

(Filing Date)

(Status - patent, pend., abandon.)

**POWER OF ATTORNEY** As named inventors, we hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Date

12/15/99 1999

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